

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application.

Please amend claims 1-10 and 12-32 as indicated below (material to be inserted is in **bold and underline**, material to be deleted is in ~~strikeout~~ or (if the deletion is of five or fewer consecutive characters or would be difficult to see) in double brackets [[ ]]):

**Listing of Claims:**

1. (Currently Amended) A method for ~~synthesizing~~ **applying** a reference value ~~[[in]]~~ **to** an electrocardial waveform **including a series of heart beats, the method** comprising:

identifying a triggering event within the electrocardial waveform;

waiting a period of time after the triggering event ~~until the electrocardial waveform enters~~ **for** an interval of relative inactivity **In the waveform**;

sampling the electrocardial waveform during the interval of relative inactivity **to provide a sample voltage value corresponding to a selected beat**; and

**dynamically** referencing the electrocardial waveform to the sample **voltage value over a period of the selected beat**.

2. (Currently Amended) The method of claim 1, wherein the interval of relative inactivity occurs during the **a TP** ~~[[PT]]~~ interval of the electrocardial waveform.

3. (Currently Amended) The method of claim 1, wherein the triggering event is ~~the~~ **a** peak R-value in ~~the~~ **a** QRS complex of the electrocardial waveform.

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4. (Currently Amended) The method of claim 1, wherein the triggering event is ~~a~~ the peak R-value in ~~a~~ the QRS complex of the electrocardial waveform followed by at least one of ~~the~~ a negative S peak in the QRS complex and ~~the~~ a T wave.

5. (Currently Amended) The method of claim 1, wherein the triggering event is a the ~~positive~~ peak R-value in a the QRS complex followed by a period of at least 0.2 seconds of relative inactivity.

6. (Currently Amended) The method of claim 1 ~~[[5]]~~, further comprising the step of measuring a value of the interval of relative inactivity between successive peak R values and modifying the length of the period of time waiting ~~adjusting the period of time used in the waiting step~~ in response to the measured interval values ~~measuring step~~.

7. (Currently Amended) The method of claim 1, wherein the sample voltage value supplants a ground provided by a reference electrode used in recording the electrocardial waveform.

8. (Currently Amended) The method of claim 1, wherein ~~the sampling step~~ referencing the electrocardial waveform includes supplying a reference voltage substantially equal to the value of the sampled waveform during the interval of relative inactivity ~~voltage~~.

9. (Currently Amended) The method of claim 1, wherein ~~the identifying~~ [[a]] the triggering event ~~step~~ additionally comprises detecting frequency components in the electrocardial waveform.

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10. (Currently Amended) A system for generating ~~synthesizing~~ a reference value for an electrocardial waveform including a series of beats, comprising:

at least one electrode input that conveys a voltage signal of representing the electrocardial waveform of a patient;

an event detector that detects an event within the electrocardial waveform;

a sampling device that determines the reference value corresponding to a selected beat;

a timing device that, after a wait period ~~of time~~ and in response to the event detector, activates ~~[[a]]~~ the sampling device; and

a referencing element that applies the reference value to the voltage signal over a period of the selected beat.

~~wherein the sampling device determines the reference value to which the electrocardial waveform is referenced.~~

11. (Original) The system of claim 10, wherein the reference value is substantially zero volts.

12. (Currently Amended) The system of claim 10, wherein the event is ~~the~~ an R peak of ~~the~~ a QRS complex of the electrocardial waveform.

13. (Currently Amended) The system of claim 10, wherein the event is an interval of relative inactivity followed by a ~~the~~ peak of a ~~the~~ QRS complex of the electrocardial waveform.

14. (Currently Amended) The system of claim 10, wherein the sampling device ~~additionally detects a~~ measures a rate of change in the voltage signal of the

electrocardial waveform, and determines ~~the sampling device determining the~~ reference value based at least in part ~~on the sample and the rate of change in the~~ voltage signal.

15. (Currently Amended) The system of claim 10, further comprising a processor, coupled to the timing device, ~~for measuring~~ configured to measure the time between successive corresponding events in the electrocardial waveform and ~~adjusting the timing device in accordance with~~ to modify a length of the wait period in response to the measured time.

16. (Currently Amended) A device for recording an electrocardial waveform, comprising:

at least one input for receiving a signal from an electrode, the signal representing an electrocardial waveform;

a sampling element to digitize the received signal;

a memory element coupled to the at least one input ~~receiver channel~~, that stores ~~[[a]] the digitized version of the received signal;~~

a processor, coupled to the memory, and configured to:

identify a ~~for searching for the peak value of the digitized version of the~~ received signal; ~~the processor also~~ and ~~measuring a period of time from the peak value until an expected region of~~ relative inactivity in the digitized version of the received signal; and

determine a voltage value sampling ~~the digitized version of the received~~  
signal during an interval ~~during the expected region of relative inactivity,~~  
the interval located relative to the peak value; and

a reference voltage generator for generating ~~the value of the sample a~~ voltage  
applied to the incoming signal substantially equal to the determined voltage  
value.

17. (Currently Amended) The device of claim 16, further comprising an  
amplifier that subtracts the generated voltage ~~value of the sample~~ from the at least  
one received signal ~~received from the at least one input by way of the at least one~~  
~~input.~~

18. (Currently Amended) The device of claim 16, wherein the identified peak  
value is the an R peak of the a QRS portion of the electrocardial waveform.

19. (Currently Amended) The device of claim 16, wherein the interval  
~~expected region of relative inactivity~~ occurs after the a T wave of a first sinus rhythm  
event but prior to the a P wave of a second sinus rhythm event, wherein both sinus  
rhythm events are components of ~~pertain to~~ the electrocardial waveform.

20. (Currently Amended) The device of claim 16, wherein the processor  
adjusts the sampling interval sampled as a function of the time between the peak  
value of a first sinus rhythm event and the peak value of a second sinus rhythm event,  
wherein both sinus rhythm events ~~pertain to~~ are components of the electrocardial  
waveform.

21. (Currently Amended) The device of claim 16, wherein the processor additionally detects ~~the presence of certain~~ frequency components in the digitized ~~version of the received signal.~~

22. (Currently Amended) A receiver for ~~receiving~~ an electrocardial signal waveform, comprising:

digital means for ~~receiving an input that represents~~ characterizing an electrocardial signal, the digital means including:

a detector element for identifying at least one distinct feature of the signal;

a sampling element to determine a value for an interval of the signal;

and

timing means to activate the sampling element after the feature is detected and at the start of the sampled interval; and

analog means operably coupled to the digital means for modifying the electrocardial signal, the analog means including:

a generator configured to output a voltage signal level as a function of the interval value; and

an integrating element to integrate the electrocardial signal with the generator signal.

~~means for receiving an input that represents an electrocardial waveform; means for detecting an event within the electrocardial waveform; means for measuring a period~~

~~of time from the detected event; and means for sampling the electrocardial waveform when the period of time has expired.~~

23. (Currently Amended) The receiver of claim 22, wherein ~~the means for detecting the event within the electrocardial waveform further comprises means for detecting~~ the at least one distinct signal feature includes the an R peak of the a QRS complex of the electrocardial signal waveform.

24. (Currently Amended) The receiver of claim 23, ~~further comprising means for detecting~~ wherein the at least one distinct signal feature includes a negative peak of the QRS complex.

25. (Currently Amended) The receiver of claim 22, wherein ~~the means for detecting the event within the electrocardial waveform further comprises means for detecting~~ the at least one distinct signal feature includes an interval of relative inactivity followed by an R peak of a the QRS complex from ~~a previously recorded electrocardial waveform in order to determine an interval of relative inactivity of a subsequently recorded electrocardial waveform.~~

26. (Original) The receiver of claim 22, additionally comprising means for detecting frequency components in the electrocardial signal waveform.

27. (Currently Amended) A computer-readable media having computer-readable instructions thereon, which, when executed by a computer, cause the computer to execute a method for synthesizing a reference value for an electrocardial waveform, the method comprising:

identifying a triggering event within the electrocardial waveform;

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sampling the electrocardial waveform during an ~~the~~ interval of relative inactivity;  
and  
referencing the electrocardial waveform to the sample;  
wherein the triggering event includes a first and a second feature of the electrocardial waveform.

28. (Currently Amended) The ~~computer-readable media~~ method for synthesizing a reference value of claim 27, further comprising waiting a period of time after the identifying the triggering event step until the electrocardial waveform enters a the TP ~~[[PT]]~~ interval.

29. (Currently Amended) The method for synthesizing a reference value of claim 27, wherein the interval of relative inactivity occurs during ~~the~~ a TP ~~[[PT]]~~ interval of the electrocardial waveform.

30. (Currently Amended) The method for synthesizing a reference value of claim 27, wherein sampling the waveform provides a sample voltage value corresponding to a selected beat, and wherein referencing the waveform to the sample includes dynamic referencing of the sampled voltage value over a period of the selected beat ~~triggering event is the peak R value in the QRS complex of the electrocardial waveform.~~

31. (Currently Amended) The method for synthesizing a reference value of claim 27, wherein the triggering event is ~~the positive~~ a peak R value in ~~a the~~ QRS complex of the electrocardial waveform followed by at least one of ~~a the~~ negative peak in the QRS complex and ~~a the~~ T wave.

32. (Currently Amended) The method for synthesizing a reference value of claim 27, wherein referencing the waveform ~~the sampling step~~ includes supplying a reference voltage substantially equal to ~~the value of the~~ a sample[[d]] voltage value.